



# CLIMATE ACTION PLAYBOOK

## Reference Page

### FOOD

- If Americans would eat beans instead of beef, the United States would immediately realize approximately 50 to 75 percent of its GHG reduction targets for the year 2020.  
<https://www.sciencedaily.com/releases/2017/05/170523081954.htm>
- Cutting global food waste by 50 percent by 2050 could reduce emissions by an estimated 4.5 gigatons.  
[http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/\\_pdf/research/clf\\_reports/2015-12-07e-role-of-diet-food-waste-in-cc-targets.pdf](http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/_pdf/research/clf_reports/2015-12-07e-role-of-diet-food-waste-in-cc-targets.pdf)
- Agriculture is responsible for 24 percent of global greenhouse gas emissions.  
<https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data>

### ENERGY

- Because of the 24/7 nature of hospital operations, the U.S. health care sector spends \$9.6 billion annually on energy, creating 8% of the entire U.S. commercial building sector's greenhouse gas emissions.
- A 30% cut in healthcare electricity's carbon pollution by 2030 would reduce greenhouse gas emissions, preventing an estimated 4,130 premature deaths, 85,000 asthma attacks, 4 million respiratory symptom events, and 3,750 hospital visit incidents, and save about \$1.2 billion in medical costs.
  - Based on Practice Greenhealth's Energy Impact Calculator. SEE below: 30% of 107 billion kWh X 14 years (present to 2030):

All US HC - ff - (123) 456-7890			
14: US Average <span>Select from Map</span>			
United States			
kWh per Year:	<input type="text" value="32,000,000,000"/>	<input type="button" value="Calculate"/>	
Clean Energy Fraction:	<input type="text" value="0"/> %		
Pollutants	Annual Quantity	Pollutant Permit Costs	
SO2 (Tons):	88,793.21	\$48,658,676	per year
NOx (Tons):	31,321.17	\$92,397,442	per year
CO2 (Tons):	22,764,333.83	\$409,758,009	EU Pricing
Mercury (lbs):	891.59	\$57,953,128	per year
Incidents	Per Year	Societal Value	Direct Medical Costs
Premature Death:	295.96	\$2,001,552,390	\$90,211,976
Chronic Bronchitis:	188.33	\$89,475,050	\$23,181,081
Hospital Visit Incidents:	268.23	\$3,578,529	\$2,862,706
Asthma Attacks:	6,074.40	\$371,443	\$354,400
Respiratory Symptoms:	288,715.09	\$10,681,880	\$10,681,880
Work Loss Days:	53,459.62	\$9,884,131	\$9,204,838
Mercury Related:	N/A	\$126,872,769	\$126,872,769
<b>Totals:</b>	<b>N/A</b>	<b>\$2,242,416,193</b>	<b>\$263,369,649</b>
<b>Unintended Impacts/kWh:</b>		<b>0.07008</b>	<b>0.00823</b>

- Water is also a major contributor to greenhouse gas emissions from the energy consumed during distribution and treatment, plus the water used in energy extraction and generation itself.  
<http://www.waterrf.org/knowledge/energy-management/FactSheets/EnergyMgt-WaterEnergyNexus-FactSheet.pdf>



## OR

- It is estimated that the operating room in a hospital is responsible for 20% to 30% of its total waste and up to 60% of the facility's regulated medical waste.
  - 4. Goldberg ME, Vekeman D, Torjman MC, Seltzer JL, Kynes T. Medical waste in the environment: do anesthesia personnel have a role to play. *J Clin Anesth.* 1996;8(6):475-479. [Cited Here...](#) | [PubMed](#) | [CrossRef](#)
  - 5. Tieszen ME, Gruenberg JC. A quantitative, qualitative, and critical assessment of surgical waste. Surgeons venture through the trash can. *JAMA.* 1992;267(20):2765-2768. [Cited Here...](#) | [PubMed](#) | [CrossRef](#)
- Desflurane, a widely used anesthetic in the OR, has more than 2000 times the global warming potential as carbon dioxide.  
<https://www.asahq.org/resources/resources-from-asa-committees/environmental-sustainability/greening-the-operating-room#2enviro>
- Given that ORs are often a third of a hospital's expenses, the savings opportunities are vast; Practice Greenhealth award applicants reported nearly \$42 million in aggregate cost savings and saved an average of \$24,656 per operating room.

## PURCHASING

- It is estimated that nearly **60-80% of a health systems' greenhouse gas emissions are embedded** in the products and services they buy – their upstream supply chain.  
<http://www.sduhealth.org.uk/policy-strategy/reporting/nhs-carbon-footprint.aspx>
- A 2016 study by NHS identified the manufacture of medical instruments and pharmaceuticals as **two of the largest areas for emissions in acute care settings**.  
<http://www.sduhealth.org.uk/policy-strategy/reporting/nhs-carbon-footprint.aspx>  
[http://www.sduhealth.org.uk/documents/publications/HCS\\_Carbon\\_Footprint\\_v5\\_Jan\\_2014.pdf](http://www.sduhealth.org.uk/documents/publications/HCS_Carbon_Footprint_v5_Jan_2014.pdf)
- According to the Lancet, **nurses and environmental services staff have the highest rate of occupational asthma** in part due to the chemical exposure at work. A series of studies identify how climate change could impact the way hazardous chemicals like pesticides move through the environment, leading to greater exposure, as well as how climate change could weaken the ability of humans to tolerate these chemicals.

## WASTE

- Landfilled waste produces methane, a potent greenhouse gas with 25 times the global warming potential of carbon dioxide over a hundred year period.  
<https://www.epa.gov/lmop/basic-information-about-landfill-gas>
- Waste incinerators emit more carbon dioxide per megawatt-hour than any other fossil fuel-based power source, including coal-fired power plants, and have been linked to an increased risk of asthma in surrounding communities.  
<http://www.energyjustice.net/incineration/worsethancoal>
- Approximately 40% of U.S. greenhouse gas emissions are associated with the energy used to produce, process, transport, and dispose of the food we eat and the goods we use.  
<https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

## RESILIENCE

- Superstorm Sandy was the second-costliest hurricane in United States history, with an estimated \$70 billion spent on recovery. The New York health care sector alone reported \$3.1 billion in those recovery costs.  
<https://www.ncdc.noaa.gov/billions/events/US/1980-2017>  
<http://www.hhnmag.com/articles/3643-resilient-design-protects-hospitals-from-natural-disasters>
- In 2016, the U.S. had 15 weather-related disaster events (droughts, wildfires, inland floods, severe storms, and a tropical cyclone) totaling over \$46 billion in direct costs, and leading to 138 fatalities.  
<https://www.climate.gov/news-features/blogs/beyond-data/2016-historic-year-billion-dollar-weather-and-climate-disasters-us>

## TRANSPORTATION

- Currently, 97% of vehicles on the road today burn fossil fuel, and the number of vehicles worldwide is on pace to double by 2030.
  - 1. DANIEL SPERLING AND DEBORAH GORDON. 2 Billion Cars. Transforming a Culture. Available at: <http://onlinepubs.trb.org/onlinepubs/trnews/trnews259billioncars.pdf>; 2. From NY Times article: JOLLY, David. New York Times. Energy and Environment. DEC. 7, 2015. Despite Push for Cleaner Cars, Sheer Numbers Could Work Against Climate Benefits. Available at:  
[http://www.nytimes.com/2015/12/08/business/energy-environment/despite-push-for-cleaner-cars-sheer-numbers-could-work-against-climate-benefits.html?em\\_pos=large&emc=edit\\_nn\\_20151208&nl=morning-briefing&nid=72496786&r=0](http://www.nytimes.com/2015/12/08/business/energy-environment/despite-push-for-cleaner-cars-sheer-numbers-could-work-against-climate-benefits.html?em_pos=large&emc=edit_nn_20151208&nl=morning-briefing&nid=72496786&r=0)
- Transportation is the fastest growing source of greenhouse gas emissions. It comprises 26% of U.S. greenhouse gas emissions, second only to energy production at 30%.
  - 3. United States Environmental Protection Agency. Fast Facts: U.S. Transportation Sector 1990-2014. Greenhouse Gas Emissions. Office of Transportation and Air Quality. EPA-420-F-16-020. June 2016.  
<https://www3.epa.gov/otaq/climate/basicinfo.htm#2>
- According to the World Health Organization, 9 out of 10 people worldwide live in places where air pollution exceeds safe guidelines. This contributes to asthma and respiratory illness, heart disease & stroke, cancer, and traffic injuries.
  - 4. World Health Organization. WHO releases country estimates on air pollution exposure and health impact  
<http://www.who.int/mediacentre/news/releases/2016/air-pollution-estimates/en/>

## LEADERSHIP

- Health organizations and primary care physicians have shown to be the most trusted messengers on climate change, according to research by Yale and George Mason universities.  
<https://climateaccess.org/resource/six-americas-and-health-risk-global-warming>
- More and more, prospective employees are seeking job opportunities in organizations which reflect and align with their own values in regard to environmental stewardship. According to a 2011 survey by Pew Research Center, 80% of Millennials (born after 1980) want to work for companies who care about their environmental impact.